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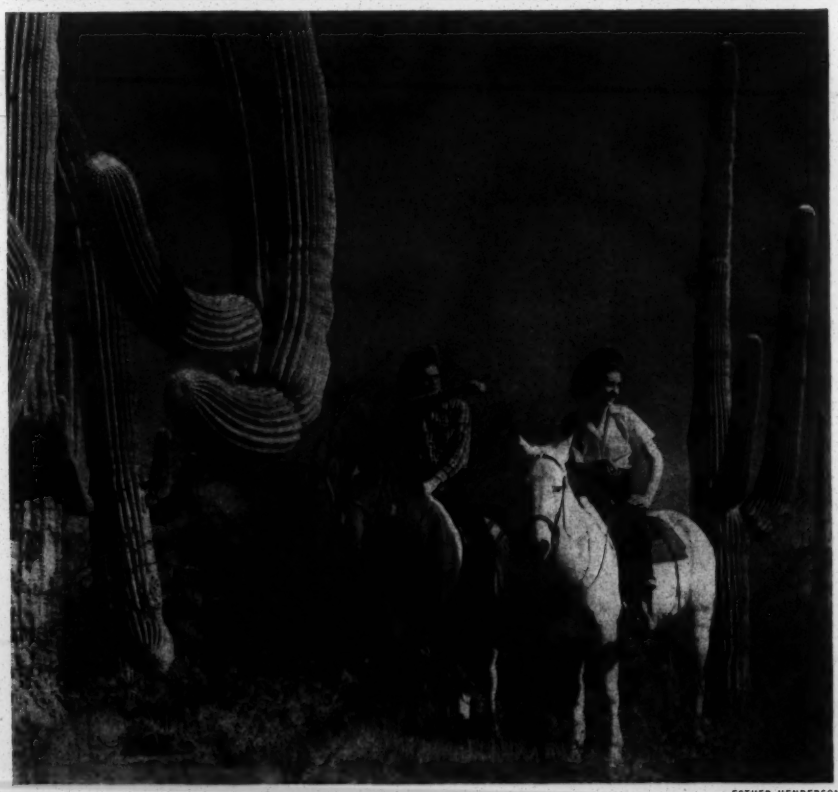

ESTHER HENDERSON

AMERICAN YOUTH SURVEYS DESERT LANDS THROUGH WHICH CORONADO RODE

Saguaro, largest of cacti, shoots huge ribbed columns toward the Arizona sky. Branches curve downward as though to drink from the desert's dusty soil, or shoot out at an angle and then grow upward parallel to the trunk. It was through such fantastic "wildlife" that Coronado (Bulletin No. 5) led his expedition northward in search of the Seven Cities of Cibola.

Bulletin No. 1, January 12, 1953

Swiss Shelter Children of Many Nations

IN the Swiss canton of Appenzell, overlooking the beautiful Boden See (Lake of Constance) and the German shore across the lake, a new kind of village has grown up. It represents an experiment in bettering international relations through the minds of children.

The International Pestalozzi Children's Village, on the outskirts of the village of Trogen, is the temporary home of some 200 children of many different nationalities. All of these children were in great need of help when they arrived in hospitable Switzerland, and many of them were war orphans.

Idea Suggested During the War

The village is the outgrowth of the idealism and compassion of Walter Corti, an Italian-speaking Swiss. Corti not only was much grieved at the way the conflict had made homeless orphans of the children of the nations at war, but he did something about it instead of merely talking about the disaster that had befallen them.

Corti first suggested establishing a village for these orphaned children in neutral Switzerland in 1944, while the war was still raging. The Swiss people, and charitable organizations in many other countries of Europe, were enthusiastic about Corti's suggestion.

Funds were raised by popular subscription. The village of Trogen gave a farm 300 years old. Youths from various countries contributed their labor to improve the farm. They built a group of houses in which the children could live, play, and study with other children of their own nationality.

Thus, French children could live in French homes, English children in English, and so on. These youngsters live much as they would in normal homes in their own countries. They speak their mother tongues and study the subjects they would in their native schools, with teachers of their own nationality.

School Had Problems in Early Days

There is a difference, however, in the new Swiss village. In some of the classes the entire group works together. Recreation and community duties are international. Italian, Greek, German, and English children may be playing soccer together while French children teach Finns the French words set to a German tune.

Mutual suspicion and distrust were problems when the school first opened. In the days immediately following the war, Polish children refused to play with Germans and the Finns tried to keep to themselves.

Gradually, as the memory of the war faded into the past, the problems changed. Fewer of the children who enter the school now are orphans of the war. And some new problems have arisen to replace the original difficulties. Polish and Hungarian children who once attended the school

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J. BAYLOR ROBERTS

FROM NORTH, WEST, AND SOUTH, NEW JERSEY ROADS CONVERGE ON GEORGE WASHINGTON BRIDGE

Like tributaries of a great river, roads flow into the main highway crossing the Hudson River bridge. The span connects upper Manhattan Island with northern New Jersey. Overpasses, underpasses, bypasses, and cloverleafs are part of the complicated approach system modern engineers have developed to carry traffic from a wide highway network (Bulletin No. 4) to the comparative bottleneck of a single bridge. George Washington Bridge has four lanes for automobiles, two for pedestrians. In the first ten months of 1952, 23,000,000 automobiles crossed the bridge.

Bulletin No. 2, January 12, 1953

Seas and Skies Challenge 1952 Explorers

EXPLORATION in 1952 ranged from ocean depths six miles beneath the surface to photographs of stars 300 million light years away. Between these extremes the polar regions, the Gulf Stream, and numerous archeological finds made front-page news.

"Few places on earth's land surfaces remain unknown, although they are ever changing," said Dr. Gilbert Grosvenor, National Geographic Society President, commenting on the year's developments. "The skies and seas are left as perhaps the greatest challenge to the geographer."

Expedition Studies Eclipse in Sudan

Responding to that challenge, the National Geographic Society has turned more than ever before to outer space and the depths of the seas in the research and expeditionary work it is sponsoring. Astronomers of the Sky Survey, a program undertaken by the Society and California Institute of Technology, have completed more than half their monumental task of photographing out to 300 million light years the universe surrounding the earth. The work has been in progress for three years on Mt. Palomar with the 48-inch Schmidt phototelescope.

Valuable information was obtained from the sun in two widely separated expeditions. One, which found the Society cooperating with the U.S. Air Force and Navy, went to the Sudan last February to observe an eclipse of the sun. This study produced evidence supporting the famous Einstein theory. The other expedition, in which the Bartol Research Foundation was the partner, reported that data obtained at Churchill, Canada, gave further evidence that the sun is a major source of the invisible cosmic rays which constantly bombard the earth.

Turning from sky to sea, the Society joined with the French Academy of Sciences and the French government to sponsor a research cruise of southern seas. The expedition is to study the ocean for four years with equipment that includes the Aqualung, a device that enables men to swim freely among the fish as deep as 300 feet below the surface.

Under auspices of the National Geographic Society-University of Miami, scientists meanwhile have discovered a mysterious pulse in the outflow of the Gulf of Mexico into the waters of the Gulf Stream.

Atlantic Canyon Discovered

The National Geographic Society, the Royal Geographic Society of London, the Scott Polar Research Institute, and Cambridge University joined forces to study the geology and the glaciers of Norway's Arctic island, West Spitzbergen.

Other scientific groups carrying on activities during 1952 included the U.S. Navy-Woods Hole Oceanographic Institution-Columbia University scientists who discovered a vast Atlantic Ocean canyon, comparable in extent to the Mississippi River and its tributaries. For the first time in history, a Danish research ship dredged part of the ocean floor six miles down and brought back proof that life exists there in spite of tremendous pressures and near-freezing temperatures.

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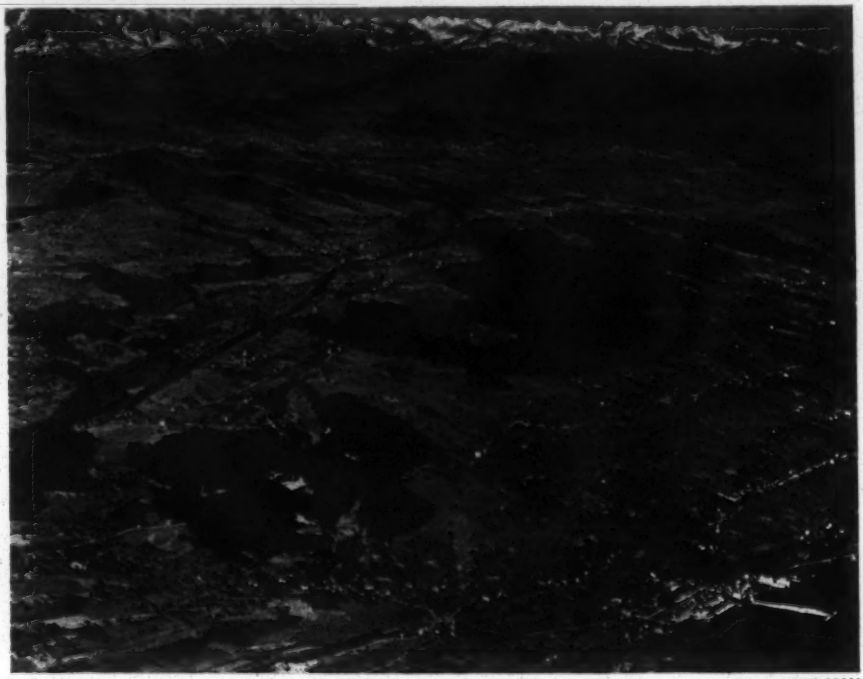
have been forced to remain in their home lands after summer vacations, whether they wish to or not.

The International Pestalozzi Children's Village was named for the Swiss educator Johann Heinrich Pestalozzi who was born in Zurich in 1746. When the French invaded Switzerland in 1798, Pestalozzi took on responsibility of caring for a number of children left homeless. He made a home for them in a deserted convent on the shores of Lac Léman (Lake Geneva). He cared for them personally until the convent was needed for a hospital and permanent homes were found for the orphans.

The object of the modern village named for Pestalozzi is to turn out and send back to their home countries, healthy and well-educated children who will have sympathy and understanding for the children—and future citizens—of other nations.

NOTE: The Boden See may be located on the National Geographic Society's map of Western Europe. Write the Society's headquarters, Washington 6, D. C., for a price list of maps.

See also "Switzerland Guards the Roof of Europe," in *The National Geographic Magazine* for August, 1950; "Swiss Cherish Their Ancient Liberties," April, 1941; and "August First in Gruyères," August, 1936. *(Back issues of the Magazine may be obtained from the Society's headquarters at 60¢ a copy, 1946 to date; $1.00, 1930-1945; $2.00, 1913-1929. Earlier issues at varied prices.)*



HANS GROSS

FERTILE APPENZELL, CENTER FOR SWISS CHEESE AND TEXTILES, OFFERS A HAVEN FOR ORPHANS

From the shores of Boden See (lower right) farm lands and forests of Switzerland's Appenzell Cantonment slope south to the Alps. Near the center of this populous plain stands Trogen, where orphaned children of many nations live on a model farm. Santis Peak (8,215 feet) dominates the horizon (left). Herds graze mountain pastures, furnishing milk for many cheese factories of the area. Factory-woven fabrics such as fine, crisp organdies and filmy voiles, made in the region, are largely replacing the hand embroideries and laces—"cottage industries"—for which Appenzell has long been famous.

Arctic Air Route Cuts U.S.-to-Europe Trip

ENGINES of a modern airliner woke echoes of medieval history last November when the *Viking*, named for Greenland's discoverers, landed at Thule on that gigantic Arctic island.

En route from California to Denmark, the plane, at Thule, reached mid-point of a short cut across the world—dream of the early explorers who sought a quicker route to the Orient in pre-Columbian days.

Thule (pronounced too-leh), or Ultima Thule, was the name people of ancient times gave to a "farthest land" of the globe which was rumored to be hidden beyond frozen seas.

Regular Flights Planned Between California and Denmark

Now the air-age Thule has made a new "Northwest Passage" possible for commerce between Atlantic and Pacific. During the past year at Thule, a Danish trading post and Eskimo settlement far up the icebound coast of Greenland, a huge United States Air Force base was built.

In November the Scandinavian Airline System began experimental flights from California to Denmark across the top of the world by way of the new air base at Thule. The first flight, taking off from Los Angeles, landed at Copenhagen's airport on November 21. Negotiations are under way for regular flights from San Francisco to Copenhagen.

The new Arctic passage lops 1,600 miles from airline distances of routes by way of New York and the North Atlantic. It swings far above the Arctic Circle, coming within 930 miles of the North Pole. By this route, California and Denmark are only 5,000 miles apart.

On another proposed leg, a true "Northwest Passage," planes would leap from Thule directly to Fairbanks, Alaska, and beyond to Tokyo, by-passing North America almost entirely on their way to the Orient.

As the first commercial line into Thule, this Scandinavian System, a combination of airlines of Denmark, Norway, and Sweden, follows the route of the ancient Vikings across northern seas to Greenland and the mainland of North America.

Radio Mast Tops Eiffel Tower

At Thule, thanks to cooperation between the United States and Denmark, the Scandinavian planes will land on a two-mile-long paved runway stretching between the Greenland icecap and a fjord at the head of Baffin Bay. There the United States has built hangars and installed repair facilities, and erected the largest settlement in Greenland—all 700 miles north of the Arctic Circle.

Weather information and radio bearings go out from a steel mast 1,200 feet high. Taller than the Eiffel Tower in Paris, this giant antenna was built to overcome the mysterious blackouts that plague radio communications in the polar regions.

Flying in the high Arctic is rapidly becoming a commonplace event as military aircraft increase their training flights and weather study. Since shortly after World War II, the United States Air Force and Navy

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Arctic and Antarctic were busy places. The U.S. Air Force set up a weather station on Fletcher's Ice Island, a mysterious 50-mile-square of prehistoric glacier believed to have broken away from Ellesmere Island to drift about the Arctic Ocean. Australia announced plans to establish a research station in Antarctica; a French expedition made extensive surveys of the Adélie Coast of that frigid continent.

In the Near East, numerous excavations added chapters to ancient history. Houses built in the New Stone Age, uncovered in Jericho, in the Hashemite Kingdom of the Jordan, gave rise to the belief that this Biblical town may be the oldest known, with a continuous history of at least 6,000 years. At Saqqara, 15 miles south of Cairo, Egyptians pushed sand from another pyramid. Archeologists uncovered a 4,000-year-old temple south of Baghdad, Iraq. It contained hundreds of tablets written in Sumerian, the most ancient language known.

In Europe, 1,000 diggers began a 75-year project to uncover the rest of Pompeii (illustration, below), buried by an eruption of Mt. Vesuvius nearly 1,900 years ago. In the Western Hemisphere excavation continued in Canada's Georgian Bay region and in the southwestern United States to fill gaps in the story of America's prehistoric Indians.

POMPEII'S FIERY LAVA OF 79 A.D. HAS BECOME TODAY'S FERTILE SOIL

Every year the shovels of archeologists, in excavating the ancient Italian city, strip more of the area's rich cropland. For centuries little was known of the vast extent of Pompeii, and farmers tilled the soil that covered its well-preserved houses, unaware of the historic treasure beneath their plows. Beyond the harvesters rises a broken section of excavated masonry.

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Bulletin No. 4, January 12, 1953

Heavy-Duty Highways Resemble Roman Roads

THE pounding destruction of heavy traffic on modern highways has caused today's road builders to revive some of the basic engineering principles which the ancient Romans used 2,000 years ago in constructing their famous roads.

Most renowned road in the Roman system, which at its peak totaled some 50,000 miles, was the *Via Appia* (Appian Way, illustration, next page). This 412-mile highway leads from Rome southeastward to Brindisi on the Adriatic, and thence to Otranto on the heel of the Italian boot.

Deep Foundations Made for Durability

A recent survey by American engineers showed that, in spite of centuries of wear and tear, the Appian Way is in better condition than many modern highways and streets. In other parts of what was the ancient Roman Empire traces of once fine roads can be found—from the English-Scottish border to Egypt and Syria.

The Roman roads owed much of their durability to careful, painstaking construction and to the engineering principle of building extremely deep, heavy foundations. Some of the old Roman roads are more than 40 inches from their base of large, hand-laid and -fitted stones to the top of the pavement.

Modern roads, built to withstand the heaviest truck traffic, sometimes have built-up foundations as deep as 36 inches. But the deep foundation which the Romans laid and which is now believed essential for heavy-duty highways was, for many years, considered unnecessary. As recently as 1934 so-called heavy-duty highways consisted of little more than an eight to ten-inch concrete slab over packed subsoil.

This was the principle of road building advanced by the famous British highway engineer, John Loudon McAdam, (1756-1836), whose name has been adapted into the English language as "macadam" to designate the familiar tarred gravel or blacktop road surface.

Today's Roads Are Machine-made

McAdam reasoned that the deep foundations which the Romans laid at great expense were not necessary. He believed that a comparatively thin layer of pavement could waterproof the subsoil on which it was built. This theory held true until the automotive age brought highway pounding more tremendous than any ever dreamed of by either the ancient Romans or the British engineer.

The breakup of thin pavements under heavy traffic led engineers back to the Roman theories. But now enormous machines do all the work from the basic excavating to the final finishing.

In Roman times the work was done by hand. Construction engineers used slave and military labor. The foundation stones and the surface paving blocks were laboriously fitted together.

It would probably cost more than $500,000 a mile to reproduce the hand-built Roman road today. The modern concrete equivalent of that

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have flown well over 500 flights to the North Pole itself, maintaining a three-times-a-week schedule.

There is a weather station on a drifting ice island, T-3, less than 200 miles from the Pole. Another station, named "Alert," stands on Ellesmere Island near the route that Admiral Robert E. Peary took to the North Pole in 1909.

The earliest pioneers of polar flying—Andree, Byrd, Bennett, Amundsen, Ellsworth, Nobile, Wilkins, Eielson—long ago predicted that commercial flights could be made across the top of the world. Yet they scarcely could have foreseen Thule, where in one year workers planted a sign proclaiming it "the garden spot of Greenland," built one of the largest air bases in the world, and brought opposite sides of the globe thousands of miles nearer each other.

NOTE: For further information, see "Flying in the 'Blowtorch' Era," in *The National Geographic Magazine* for September, 1950; "Top of the World," October, 1949; "Skyway Below the Clouds," July, 1949; "Airlift to Berlin," May, 1949; "Our Air Age Speeds Ahead," February, 1948; "Air Power for Peace," February, 1946; and many other articles listed under "Aeronautics" in *The Cumulative Index to the National Geographic Magazine.*

JAMES K. PENFIELD

THULE ESKIMOS STAND HATLESS ON THE BEACH IN THE "HEAT" OF THEIR CHILLY SUMMER

In northern Greenland, on the top-of-the-world route to Europe, temperatures range from 40 degrees above zero to 40 below. The few inches of snow that fall on Thule are quickly blown away by winds up to more than 125 miles an hour. The Thule Eskimos are the only pureblooded ones left in Greenland. In settlements farther south, natives have intermarried with Scandinavians for generations.

Bulletin No. 5, January 12, 1953

New Memorial Overlooks Coronado's Trail

A NEW national memorial that honors one of the greatest of the Spanish conquistadores to explore the southwestern United States has been established in Arizona along the Mexican border.

The Coronado National Memorial spreads over 2,745 acres of the Coronado National Forest. It includes the highest, and some of the most rugged, land along the border. The new memorial is about 45 miles west of Douglas, Arizona. Its rocky heights overlook the valley of the San Pedro River to the east, through which Francisco Vasquez de Coronado, in 1540, first entered what is now the United States.

Hoped for Gold and Emeralds

North of the memorial area Miller Peak towers 9,445 feet over the dry mountain range land (illustration, cover).

Although some copper has been found in the vicinity, Coronado and his force of caballeros, friars, foot soldiers, and Indians did not make the long trip from Mexico City in search of that metal. They were looking for the gold and emeralds of the Seven Cities of Cibola. These legendary cities were rumored to be as rich as the fabulously wealthy Inca cities of Peru.

Coronado spent little time in the rough border country. He pressed on toward Cibola, which he discovered to the north and east.

The appearance of these almost mythical towns was a bitter disappointment to the explorer. They consisted of six, not seven, Zuni Indian pueblos in the area where Gallup, New Mexico, now stands.

The Zunis were gentle, hard-working people. They had a highly developed culture that included scientific dry farming. They wove artistic robes and blankets, made attractive pottery, and fashioned beautiful jewelry from native turquoises.

Fabulous Riches Were But Myths

These Indians had stores of grain that Coronado took for his men and horses. The only jewels the Zunis possessed were semiprecious turquoises, not the valuable emeralds the Spaniards sought.

The pueblos furnished shelter for the expedition, but there were none of the huge rooms piled high with gold and precious stones which the Spaniards had been led to expect.

The simple Indian settlements were a great blow to a leader charged with finding gold. Coronado pushed on, always searching for more distant and greater riches and civilizations.

The party spent the winter on the Rio Grande in the area between where Albuquerque and Bernalillo, New Mexico, now stand. In 1541 Coronado led his men across the spurs of the mountains to the plains of the region now comprising the states of Texas, Oklahoma, and Kansas.

They crossed the Rio Grande, the Brazos, the Canadian, the Arkansas, and many lesser rivers.

Immense oceans of grass stretched endlessly before them. Over the

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road, a machine-made, heavy-duty, two-lane highway, costs from $60,000 to $100,000 per mile.

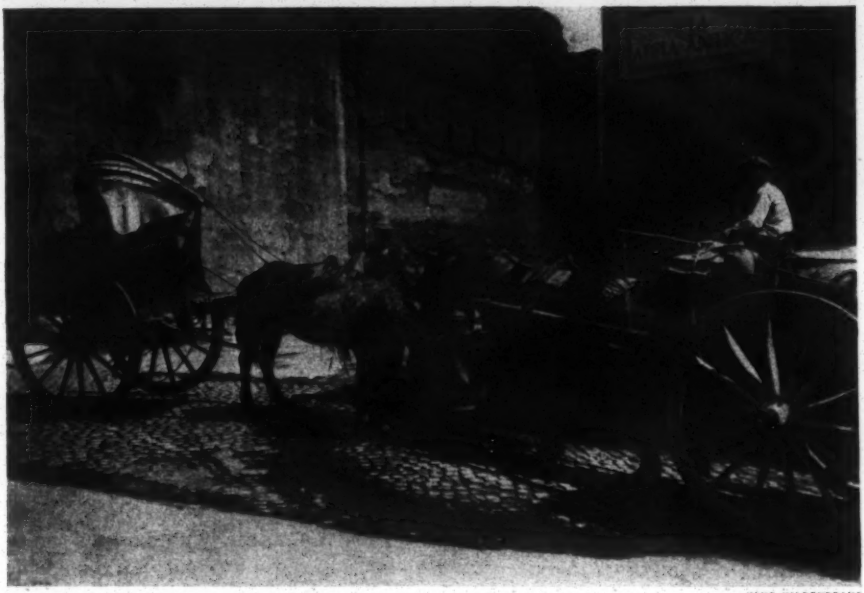
The complicated system of roads required for the approach to a much-traveled bridge (illustration, inside cover) was a problem which the ancient Romans did not have to face.

The excellent basic construction principles of the Roman roads are coming into use again. However, the ancient highways had some features which are not suited to modern traffic. Because they were used largely by foot soldiers and comparatively slow-moving wagons and chariots, some grades were very steep—too steep for modern ideas of speed.

In addition, some Roman roads were crossed by steppingstones which projected above the surrounding pavement, leaving only narrow tracks for the wheels of wagons or chariots. These stones were probably intended to provide pedestrian crossings in rainy weather. Roads sometimes ran under arches, or gates, just wide enough for conveyances of the time. Horse-drawn carts or chariots could move through these structures easily, but not the large and high-speed vehicles of today.

NOTE: For additional information, see "Stilwell Road—Land Route to China," in *The National Geographic Magazine* for June, 1945; "Alaskan Highway an Engineering Epic," February, 1943; "U. S. Roads in War and Peace," December, 1941; and "Burma Road, Back Door to China," November, 1940.

See also, in the GEOGRAPHIC SCHOOL BULLETINS, January 28, 1952, "Jersey Turnpike Adds to Nation's Toll Roads"; "Canada Plans Modern Cross-Country Highway," February 12, 1951; and "Pan American Highway Makes Progress," October 2, 1950.



HANS HILDENBRAND

ON THE APPIAN WAY, OUTSIDE THE GATES OF ROME, CART HORSES PAUSE FOR REFRESHMENT

This durable hand-made road was built in the fourth century B.C. by the censor, Appius Claudius Caecus. Blocks of stone, carefully fitted together by hand, surface a foundation also hand set. Some Roman roads were paved with much larger stones which still show deep ruts carved by ancient wheels.

rolling green miles roamed countless herds of animals which the conquistadores took for humpbacked cattle. They were bison, commonly called buffaloes. But Coronado and his followers found no gold, and at a spot on the Smoky Hill River near modern Lindsborg, Kansas, Coronado gave up the search and turned back south.

In the midst of plenty the conquistadores were hungry. They did not realize that buffalo grass was excellent fodder for their horses and that buffalo meat was nutritious food for themselves.

Fearing starvation for the expedition, Coronado ordered the long march back toward Mexico. He had failed in his mission to discover fabulous riches, but, without being conscious of it, he had accomplished one of the world's great trips of discovery and exploration.

NOTE: The area where the Coronado National Memorial has been opened may be located on the Society's map of the Southwestern United States.

For additional information, see "Adobe New Mexico," in *The National Geographic Magazine* for December, 1949; "Mapping Our Changing Southwest," December, 1948; "Down the Rio Grande," October, 1939; and "New Mexico Melodrama," May, 1938.

CLIFTON ADAMS

POLES OF AN INDIAN SHELTER FRAME THE OLD SPANISH MISSION OF SAN XAVIER DEL BAC

Spanish missionaries who followed in the wake of Coronado left impressive relics of their native architecture in the United States southwest. The Arizona region where this old mission stands now is part of the Papago Indian Reservation, in the vicinity of the new Coronado National Memorial.